

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>P802877/WO/1</b>	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/EP2004/005590</b>	International filing date (day/month/year) <b>25.05.2004</b>	Priority date (day/month/year) <b>06.06.2003</b>
International Patent Classification (IPC) or national classification and IPC		
Applicant <b>DAIMLERCHRYSLER AG</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>10</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>7</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language \_\_\_\_\_ which is the language of a translation furnished for the purposes of:
    - ☐ international search (Rule 12.3 and 23.1(b))
    - ☐ publication of the international application (Rule 12.4)
    - ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
  - ☐ the international application as originally filed/furnished
  - ☒ the description:
    - pages 1-20 \_\_\_\_\_ as originally filed/furnished
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☒ the claims:
    - nos. \_\_\_\_\_ as originally filed/furnished
    - nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
    - nos.\* 1-23 received by this Authority on 11.06.2005 with letter of 09.06.2005
    - nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☒ the drawings:
    - sheets 1/2-2/2 \_\_\_\_\_ as originally filed/furnished
    - sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
    - sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
  - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, nos. \_\_\_\_\_
  - ☐ the drawings, sheets/figs \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - ☐ the description, pages \_\_\_\_\_
  - ☐ the claims, nos. \_\_\_\_\_
  - ☐ the drawings, sheets/figs \_\_\_\_\_
  - ☐ the sequence listing (*specify*): \_\_\_\_\_
  - ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-23</u>	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	<u>1-23</u>	NO
Industrial applicability (IA)	Claims	<u>1-23</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)****1. Reference is made to the following documents:**

D1: DE 199 01 953 A (BOSCH GMBH ROBERT) 27 July  
2000 (2000-07-27)

D2: EP-A-0 433 858 (EATON CORP) 26 June 1991 (1991-  
06-26)

D3: DE 100 30 738 C (DAIMLER CHRYSLER AG) 30 August  
2001 (2001-08-30)

D4: DE 198 34 752 A (PAUL UWE) 8 July 1999 (1999-  
07-08)

D5: DE 199 32 779 A (DAIMLER CHRYSLER AG) 25  
January 2001 (2001-01-25)

D6: DE 195 07 957 C (DAIMLER BENZ AG) 12 September  
1996 (1996-09-12)

D7: DE 103 12 548 B (AUDI NSU AUTO UNION AG) 19 May  
2004 (2004-05-19)

The following documents were introduced into the  
proceedings by the examiner:

D8: DE 198 42 827 A (VOLKSWAGENWERK AG) 23 March  
2000 (2000-03-23)

D9: DE 100 17 072 A (Yazaki Corp.) 26 October 2000

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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(2000-10-26)

D10: US 6 466 684 B (Yazaki Corp.) 15 October 2002

(2002-10-15)

D11: US 6 535 114 B (Toyota) 18 March 2003 (2003-03-18)

D12: EP-A-1 030 188 (Mitsubishi) 23 August 2000 (2000-08-23)

**2. Novelty / inventive step:**

2.1 The present application meets the requirements of PCT Article 33(1) since the subject matter of **claims 1-23** is novel over the available prior art (PCT Article 33(2)).

2.2 The present application does not meet the requirements PCT Article 33(1) because the subject matter of **claims 1-23 is not inventive** (PCT Article 33(3)). The reasons for this are as follows:

Attention is drawn initially to the fact that - contrary to the applicant's argument in the letter of 12 May 2005 (page 3, third paragraph) - the suggestion in D1, column 2, line 48 as to the alternative use of **optical sensors** is indeed sufficient for a person skilled in the art to take into account the use of imaging sensor means in the sense of the amended claim 1. Imaging sensor means such as, for example, video- and in particular CCD cameras, have long since been known in automotive technology for monitoring the

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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environment. CCDs are considered optical sensors.

It is therefore deemed obvious to consider D1 along with D5, D8 or any other documents relating to sensor or camera systems.

According to the further comments made by the applicant in the letter of 12 May 2005 (bottom of page 3 to page 4, second paragraph), the difference between the subject matter of the amended claims 1 (device) and 23 (method) and the obvious **consideration of D1 together with D5 or D8** is that, to determine the at least one angular size, an **alteration over time of geometrical properties** of the two-dimensional representation and/or the depiction of the linear partial region of the detected contours of the semitrailer or trailer is evaluated.

If **D1 is considered together with D5**, the examiner agrees with the argument advanced, since D5 determines the angle by means of momentary measurement of the distances, but not via a detection of the alteration over time of the representation/contours, and although D1 shows in column 5, lines 2ff and in column 6, lines 40ff that the dynamics (alteration over time) of the semitrailer angle is detected (so as to detect oscillating movements of the semitrailer/trailer), it does not show that, to detect the semitrailer angle itself, alterations over time of a two-dimensional representation or a linear partial region of the contours of the semitrailer are

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

detected.

However, D8 shows in column 2, lines 47-56 that tracking the contours (= detection of alterations over time) of partial regions of an image can be undertaken, which allows an angle to be determined by a person skilled in the art in an obvious manner. In the opinion of the examiner, the **combination of D1 with D8** therefore anticipates the subject matter of claims 1 and 23.

Dependent claims 2-22 do not contain any features able to substantiate an inventive step with respect to a combination of D1 with D8 (see the opinion of 31 March 2005, Box V, point 2.2).

- 2.3 It is apparent from the section "Implementation" (page 5ff of the letter of 12 May 2005) that the aforementioned differentiating feature is concerned with the evaluation of the **optical flow** (page 12, paragraph 3 of the description = evaluation of the temporal sequence of two-dimensional representations), which - as was plausibly shown (page 6-7 of the letter of 12 May 2005) - enables the semitrailer angle to be detected without prior knowledge of the distance to the object or its size (PCT Article 5).

The evaluation of the optical flow for detecting an aspect or object angle is, however, generally known (see also the applicant's comments in the letter of 12 May 2005, page 5, paragraphs 5 and 6:

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

"using standard image processing methods").

So as to show that this also applies to the technical field of monitoring the environment of motor vehicles, documents D9-D12 were subsequently searched.

- 2.4 It is apparent that the subject matter of **claims 1-23** is not inventive with respect to, in particular, **a combination of D1 with D9-D11**.

**D9** shows a rear-view monitoring device (page 2, lines 55ff; figures 9a-d) which, using the **optical flow** method, determines the relative position of a motor vehicle situated to the rear, wherein only a partial region of the image is required for the evaluation (column 4, lines 6ff). Furthermore, **D9** proposes the detection of road lane markings so as to estimate the position of one's own vehicle relative to other vehicles (column 4, lines 11ff).

**D10** is very similar to **D9**. Attention is drawn to the fact that **D10** explicitly shows in column 5, lines 10-30 that object angles can also be detected using the method with **optical flow** (e.g. the road lane markings).

**D11** discloses object recognition and tracking using **optical flow** on the road surface.

**D12** likewise shows object recognition and tracking using **optical flow**, wherein, in particular, depth

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

or size information is obtained concerning the object (similar to the distance and length of a semitrailer) and its speed and direction of movement [0002, 0003, 0008, 0020].

Hence, D9-D12 show rear-view monitoring devices such as are mentioned in D1 (column 2, line 48) which operate with the optical flow method and are therefore able to detect the at least one angular size to be measured (such as is described in D1) from the **alteration over time of geometrical properties** of the two-dimensional representation and/or the image of the linear partial region of the detected contours of the semitrailer or trailer.

D1 viewed together with D9-D12 therefore anticipates the subject matter of claims 1 and 23.

Dependent claims 2-22 do not have any inventive features either in the light of this prior art.



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

Application No.  
Patent No.

Publication date  
(day/month/year)

Filing date  
(day/month/year)

Priority date (valid claim)  
(day/month/year)

Should it transpire that the priority of the present application is not valid, D7 can also be considered prior art and could likewise be consulted with respect to the above objections on inventive step.

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure  
(day/month/year)

Date of written disclosure  
referring to non-written disclosure  
(day/month/year)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/005590

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

- a) The requirements of PCT Rule 5.1.(a)(ii) are not met since publications D2, D3, D4 and D8-D12, which belong to the relevant prior art, are not acknowledged in the description.
  
- b) Observations such as "wherein the disclosed content of this publication is explicitly intended to be part of the present disclosure" (see comments with respect to D5 and D6, description, page 13 and page 19) are not admissible (see PCT/GL/ISPE, page 34, point 4.26).